

**ULTRA FAST MULTI-PROCESSOR SYSTEM SIMULATION**  
**USING DEDICATED VIRTUAL MACHINES**

**ABSTRACT**

An apparatus is used to simulate a multiple-processor system by creating multiple virtual machines. The multiple virtual machines may be formed within a single central processing unit (CPU) hardware implementing Virtual Machine Extension (VMX) technology. In an example, the apparatus includes a host environment and a virtual environment that includes the multiple virtual machines. Virtual code may be executed on each of the multiple virtual machines under the control of a direct execution monitor within the host environment. The direct execution monitor may create the virtual machines and control exit and entry thereto. The direct execution monitor may monitor the virtual machines for sensitive events that are to be handled by the host environment, not the virtual environment. The direct execution monitor may determine the nature of the sensitive event, such as whether the instructions associated with the sensitive event should be de-virtualized and simulated separately. The apparatus allows the virtual code to operate as though it is operating on its own dedicated physical processor at a native level.